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Supplement to The Wi
Electrical Trader, March

"TRADER" SERVICE SHEET

982

ALBA 3811 (A.C.) 3812 (A.C./D.C.)

Covering also Associated Radiograms

TWO basic models are covered in this Service Sheet, one the A.C. model 3811, and the other its A.C./D.C. equivalent, model 3812. The information is presented initially on the A.C. version, but the differences in the A.C./D.C. version are explained all the way through.

In the circuit diagram, which is drawn as usual in solid line for the A.C. version, the differences are shown as additions in broken line. In the component tables, separate columns are given throughout for the two sets of values and location references.

The receivers are 4-valve (plus rectifier) 3-band superhets, and each makes provision for a gramophone pick-up, with switching, and an external speaker. The A.C. model operates from A.C. mains of 110 V and 200-250 V, 40-60 c/s, and the A.C./D.C. version from mains of 200-250 V. The waveband ranges are 16-53 m, 190-560 m and 800-2,000 m.

Similar chassis are employed in the 6911, which is an autoradiogram version of the 3811; and in the 5912, which is an autoradiogram version of the 3812. The small differences in the 6911 radiogram are explained overleaf.

Other models with which this service data may be used are the A.C. radiogram 5561B, the A.C. autoradiograms 6561B, 6571B, 6581B and the A.C./D.C. radiograms 5562B (single) and 6582B (auto). Although physically their chassis are quite different from our basic models, their circuits are identical with those of the 6911 and 5912 respectively.

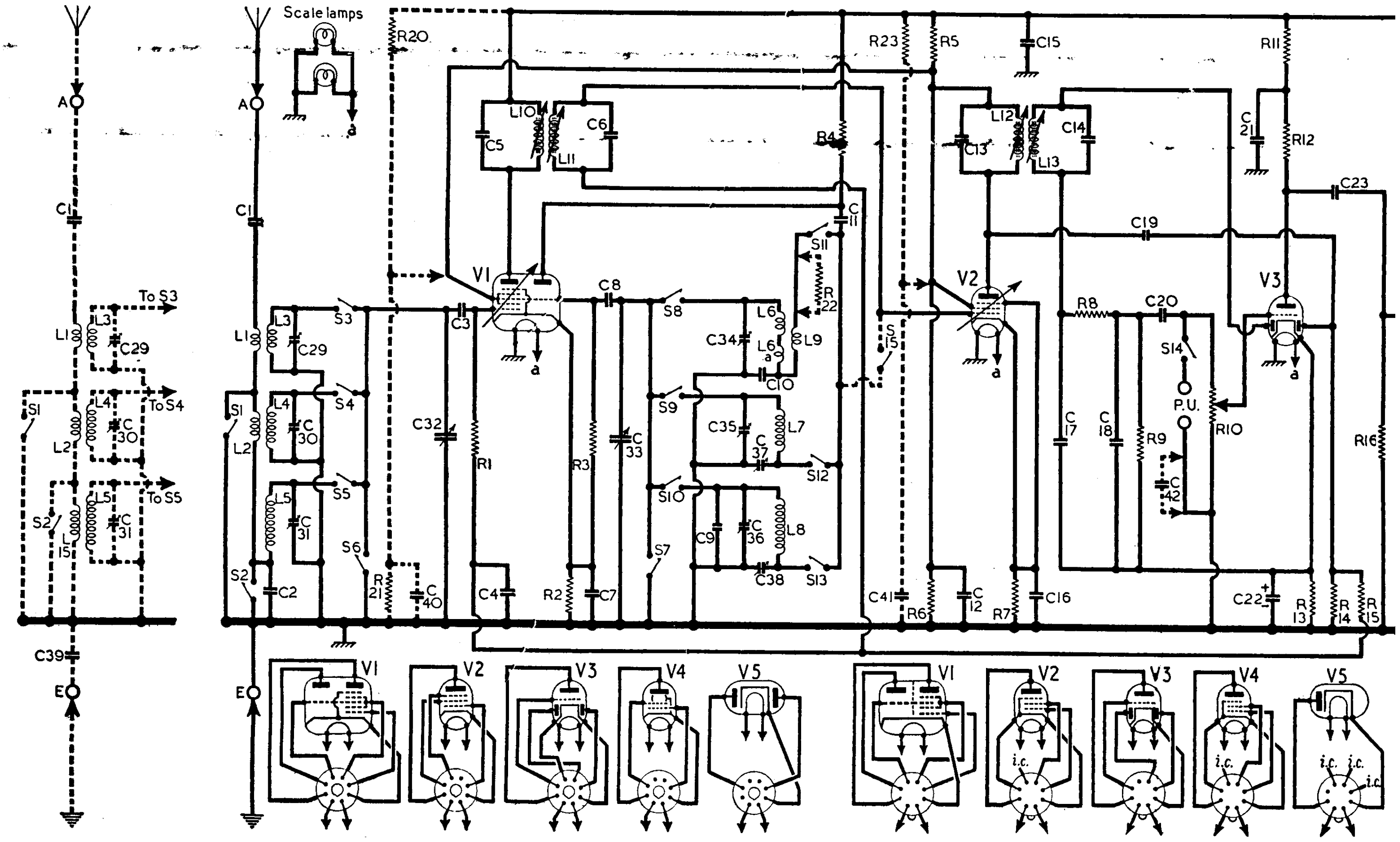
Release dates and original prices: 3811, 3812, *October,* 1950, £14 14*s;* 6911, 5912, *October,* 1950, £43 1*s;* 5561*B, July,* 1949, £34 13*s;* 6561*B, July,* 1949, £38 17*s;* 6571*B, July,* 1949, £46 4*s;* 6581*B, August,* 1949, £57 15*s;* 5562*B, July,* 1949, £38 17*s;* 6582*B, December,* 1949, £59 17*s. Purchase tax extra.*

CIRCUIT DESCRIPTION

Aerial input via coupling coils **L1** (S.W.), **L2** (M.W.) and "bottom" coupling capacitor **C2** (L.W.) to single tuned circuits **L3, C32** (S.W.), **L4, C32** (M.W.) and **L5, C32** (L.W.). In later models, and in all A.C./D.C. models, the L.W. aerial coupling is by **L15. C39** isolates the earth socket in the A.C./D.C. models.

First valve **(V1, Cossor 7S7** (A.C. model) or **Mullard UCH42** (A.C./D.C. model)**)** is a triode-heptode operating as frequency changer with internal coupling. Oscillator grid coils **L6** (S.W.), **L7** (M.W.) and **L8** (L.W.) are tuned by **C33.** Parallel trimming by **C34** (S.W.), **C35** (M.W.) and **C9, C36** (L.W.); series tracking by **C10** (S.W.), **C37** (M.W.) and **C38** (L.W.). In some chassis, tracking on S.W. is adjusted by **L6a,** which consists of the connecting lead between **L6** and **L9,** coiled up to form an inductance. Reaction coupling from anode via **C11** across the common impedance of the trackers on all wavebands, with the addition of inductive coupling by **L9** on S.W.

Second valve **(V2, Cossor 7B7** (A.C. model) or **Mullard UF41** (A.C./D.C.



Circuit diagram covering the Alba 3811, 3812 series. The main diagram, drawn in solid line, is that of the A.C. receiver 3811. Inset in in the A.C./D.C. version 3812. Inset beneath the circuit are the valve base diagrams for the two versions: on the left, with loctal bases, is th model)) is a variable-mu R.F. pentode, operating as intermediate frequency amplifier with tuned transformer couplings **C5, L10, L11, C6** and **C13, L12, L13, C14.**

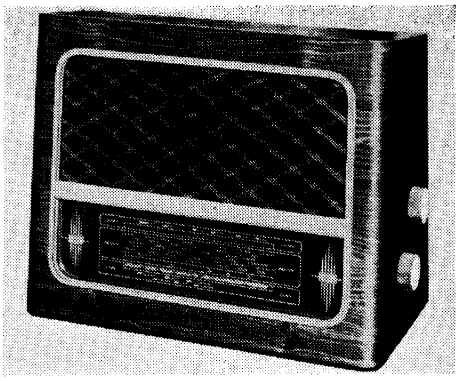
Intermediate frequency 470 kc/s.

The diode signal detector is part of double diode triode valve **(V3, Cossor 7C6** (A.C. model) or **Mullard UBC41** (A.C./D.C. model)**).** A.F. component in rectified output is developed across the diode load **R9** and passed via **C20** and volume control **R10** to the grid of the triode section.

Second diode of **V3,** fed from **V2** anode via **C19,** provides a D.C. potential, which is developed across load resistor **R14** and fed back as bias to the F.C. and I.F. valves, giving automatic gain control. I.F. filtering by **C17, R8** and **R18.**

Provision is made for the connection of a gramophone pick-up across **R10** via **S14,** which closes when the waveband control is turned to the Gram position. **S6** and **S7** also close on Gram to mute radio. In the A.C./D.C. model, **S15** closes to provide further muting.

Resistance-capacitance coupling by **R12, C23** and **R16** between **V3** anode and pentode output valve **(V4, Cossor 7C5** A.C. model) or **Mullard UL41** (A.C./D.C. model)**).** Fixed tone correction in anode circuit by **C25,** and three-position tone control by **C24, R17** and **S16, S17.**



The Alba 3811 and 3812.

Provision is made for the connection of a low impedance speaker across **T1** secondary, and when this is used the internal speaker may be muted by pulling out the speaker plug from the centre Ext. L.S. socket.

In the A.C. model, H.T. current is supplied by I.H.C. full-wave rectifying valve **(V5, Cossor 7Y4).** Smoothing by electrolytic capacitors **C27, C28** and resistor **R19. V5** heater is fed from the same winding on **T2** as the other valves.

In the A.C./D.C. version, H.T. current is supplied by half-wave rectifying valve **(V5, Mullard UY41).** Smoothing by iron-cored choke **L16** and resistor **R19** in association with capacitors **C27, C28, C43.**

The screen of **V1** is fed via H.T. potential divider **R20, R21,** and decoupled by **C40.** The valve heaters, scale lamps and ballast resistor **R25** are connected in series across the mains input. **R26** protects the scale lamps, and **R24** the rectifier, from current surges. R.F. filtering by **C44.**

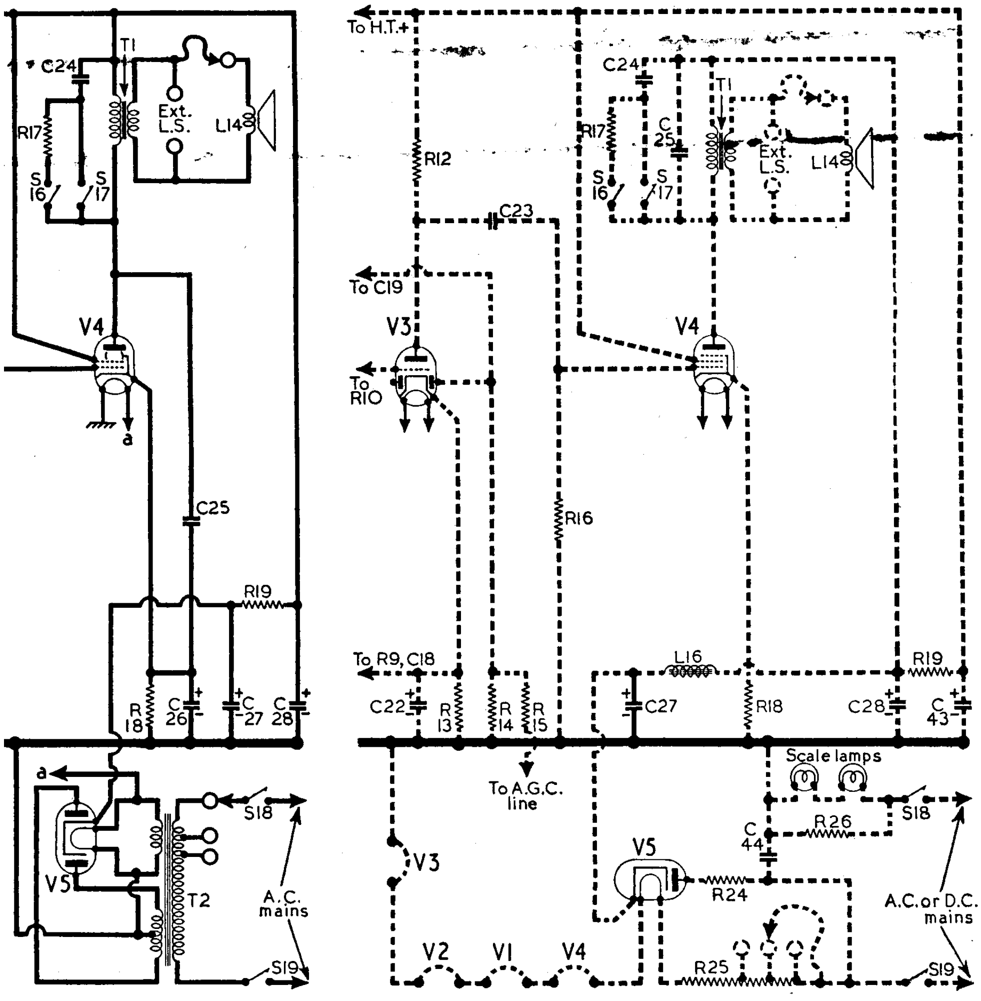
COMPONENTS AND VALUES

Resistors	A.C.		A.C./D.C.	
	Values	Locations	Values	Locations
R1	1MΩ	F4	1MΩ	K6
R2	220Ω	F4	220Ω	K6
R3	47kΩ	F3	47kΩ	K6
R4	27kΩ	F3	27kΩ	K5
R5	22kΩ	D4	—	—
R6	56kΩ	E4	—	—
R7	300Ω	F4	300Ω	K6
R8	47kΩ	F3	47kΩ	K6
R9	560kΩ	F3	560kΩ	J5
R10	250kΩ	C2	250kΩ	C2
R11	47kΩ	E4	—	—
R12	270kΩ	E4	47kΩ	J6
R13	2·2kΩ	E4	2·2kΩ	K6
R14	1MΩ	E3	1MΩ	J6
R15	1MΩ	E3	1MΩ	J6
R16	560kΩ	E4	820kΩ	J6
R17	10kΩ	D3	10kΩ	H5
R18	270Ω	E3	200Ω	J6
R19	560Ω	D4	560Ω	J6
R20	—	—	22kΩ	K5
R21	—	—	33kΩ	K5
R22	—	—	100Ω	L5
R23	—	—	90kΩ	K6
R24	—	—	100Ω	J5
R25	—	—	*1·3kΩ	C1
R26	—	—	60Ω	H6

* Tapped at 800Ω + 250Ω + 250Ω from V5 heater.

Capacitors	A.C.		A.C./D.C.	
	Values	Locations	Values	Locations
C1	200pF	G4	200pF	L6
C2	0·01μF	G4	—	—
C3	100pF	G3	100pF	L5
C4	0·05μF	F3	0·05μF	K5
C5	100pF	A2	100pF	A2
C6	100pF	A2	100pF	A2
C7	0·1μF	F4	0·1μF	K6
C8	100pF	G3	100pF	L5
C9	47pF	G4	47pF	L5
C10	5,343pF	F3	5,343pF	K5
C11	500pF	G4	100pF	L5
C12	0·25μF	F3	—	—
C13	100pF	B2	100pF	B2
C14	100pF	B2	100pF	B2
C15	0·1μF	F3	0·25μF	J5
C16	0·1μF	F4	0·1μF	K6
C17	100pF	F4	100pF	K5
C18	100pF	F4	100pF	K6
C19	12pF	E4	12pF	K6
C20	0·005μF	F4	0·005μF	K6
C21	0·1μF	E4	—	—
C22*	25μF	E4	25μF	J6
C23	0·005μF	E4	0·005μF	J6
C24	0·05μF	D4	0·05μF	H5
C25	0·005μF	E3	0·005μF	J5
C26*	25μF	E3	—	—
C27*	32μF	C2	16μF	C2
C28*	32μF	C2	32μF	C2
C29‡	65pF	A2	65pF	A2
C30‡	65pF	A2	65pF	A2
C31‡	65pF	A2	65pF	A2
C32†	‖528pF	A2	§528pF	A2
C33†	‖528pF	A2	§528pF	A2
C34‡	65pF	A1	65pF	A1
C35‡	65pF	A1	65pF	A1
C36‡	65pF	A1	65pF	A1
C37‡	500pF	A1	500pF	A1
C38‡	200pF	A1	200pF	A1
C39	—	—	0·05μF	K6
C40	—	—	0·1μF	K5
C41	—	—	0·1μF	K6
C42	—	—	0·5μF	K5
C43*	—	—	32μF	C2
C44	—	—	0·02μF	J5

* Electrolytic. †Variable. ‡ Pre-set.
§ " Swing " value, min. to max.



and around it are diagram sections in broken line that indicate the differences
A.C. complement; on the right, with B8A bases, is the A.C./D.C. complement.

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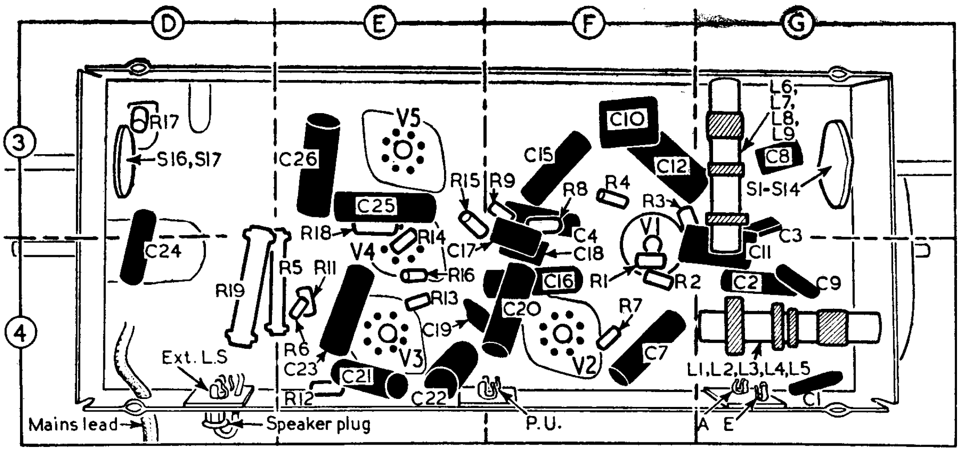


Underside view of the A.C. chassis, model 3811. **L6** may be supplemented with a tracking coil **L6a,** which we show in the A.C./D.C. chassis opposite.

OTHER COMPONENTS		Approx. Values (ohms)	Locations
	A.C. Model		
L1	Aerial coupling coils	Very low	G4
L2		1·3	G4
L3	Aerial tuning coils	Very low	G4
L4		3·2	G4
L5		12·5	G4
L6	Oscillator tuning coils	Very low	G3
L7		2·2	G3
L8		4·8	G3
L9	Osc. reaction ...	0·2	G3
L10	1st I.F. trans. Pri.	11·0	A2
L11	1st I.F. trans. Sec.	11·0	A2
L12	2nd I.F. trans. Pri.	11·0	B2
L13	2nd I.F. trans. Sec.	11·0	B2
L14	Speech coil ...	3·2	—
T1	Primary	360·0	—
	Secondary ...	0·3	
T2	Primary, total ...	38·0	C2
	H.T. sec., total ...	500·0	
	Heater sec. ...	Very low	
S1-S14	Waveband switches	—	G3
S16, S17	Tone control sw. ...	—	D3
S18, S19	Mains sw., g'd R10	—	C2
	A.C./D.C Model		
L1	Aerial coupling coils	Very low	L6
L2		1·3	L6
L3	Aerial tuning coils	Very low	L6
L4		3·2	L6
L5		12·5	L6
L6	Oscillator tuning coils	Very low	L5
L6a		Very low	L5
L7		2·2	L5
L8		4·8	L5
L9	Osc. reaction	0·2	L5
L10	1st I.F. trans Pri.	11·0	A2
L11	1st I.F. trans Sec.	11·0	A2
L12	2nd I.F. trans Pri.	11·0	B2
L13	2nd I.F. trans Sec.	11·0	B2
L14	Speech coil	3·2	—
L15	L.W. aerial coup.	50·0	L6
L16	Smoothing choke	60·0	H6
T1	Primary	360·0	—
	Secondary	0·3	
S1-S15	Waveband switches	—	L5
S16, S17	Tone control switches	—	H5
S18, S19	Mains sw., g'd R10	—	C2

DISMANTLING THE SET

Removing Chassis.—Pull off two control knobs from each side of cabinet;
unsolder the four leads from the tags on the output transformer;
unsolder the lead from the speech coil tag on the speaker;
remove the four bolts (two cheese-head at front, two Phillips type at rear) with washers, securing the chassis to the cabinet;
withdraw the chassis from the cabinet, with the right-hand corner leading to allow the control spindles to clear the cabinet.

When replacing, the leads to the speaker and **T1** should be connected as follows: lead from top Ext. L.S. socket to top tag on **T1**; lead from **V4** anode to second tag on **T1**; lead from H.T. line to third tag; lead from centre Ext. L.S. socket to fourth tag; lead from bottom Ext. L.S. socket to top speech coil tag on speaker.

Removing Speaker.—Remove the four 4BA nuts with shakeproof washers securing the rim of the speaker to the baffle.

When replacing, the output transformer should be on the right-hand side.

VALVE ANALYSIS

Valve voltages and currents given in the tables (col. 3) are those measured in our receivers when they were operating from A.C. mains of 220 V. The receivers were tuned to the highest wavelength end of M.W., and the volume control set at maximum, but there was no signal input.

Voltage measurements were made with an Avo Electronic TestMeter, which introduces no appreciable voltage drop, and allowances must be made for the current taken by other meters. Chassis was the negative connection in every case.

When measuring currents, a 0.1 μF capacitor should be shunted across the meter leads to prevent instability which may give rise to erroneous readings.

Valve	Anode		Screen		Cath.
	V	mA	V	mA	V
	A.C. Model				
V1 7S7...	260 Oscillator 150	1·0 3·8	68	2·15	1·8
V2 7B7	68	1·1	68	1·0	2·0
V3 7C6	106	0·45	—	—	1·0
V4 7C5	250	40·0	260	6·5	13·0
V5 7Y4	270†	—	—	—	300·0
	A.C./D.C. Model				
V1 UCH42	190 Oscillator 80	2·4 3·6	85	2·5	2·0
V2 UF41	190	4·2	80	1·4	1·8
V3 UBC41	150	0·8	—	—	1·8
V4 UL41	190	35·0	190	6·4	10·0
V5 UY41	220†	—	—	—	210·0

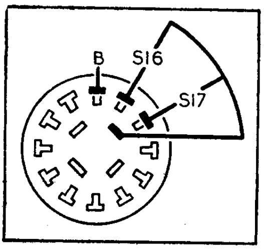
† A.C.

GENERAL NOTES

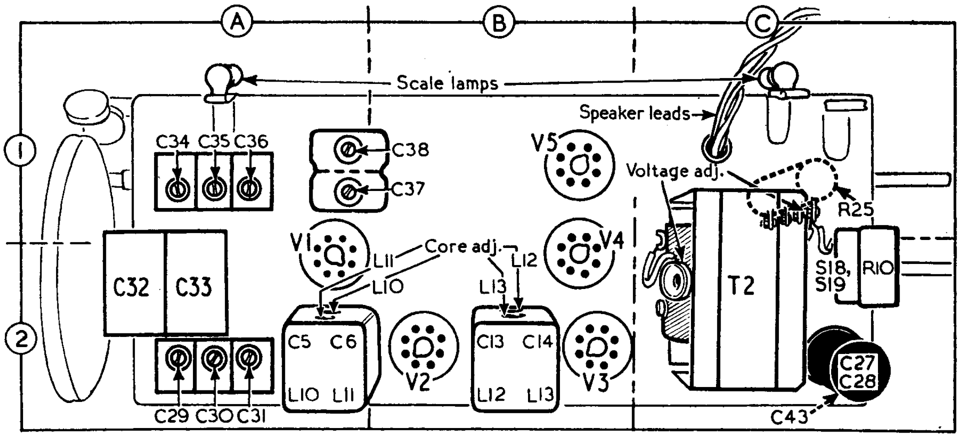
Switches.—**S1-S13** (and in the A.C./D.C. version **S15**) are the waveband switches, and **S14** is the gram pick-up switch, ganged in a single rotary unit beneath the chassis. The unit is indicated in our underside drawing of the chassis, where it is mounted on the right-hand side-member.

It is shown in detail in the diagram in col. 4, where it is drawn as seen from the opposite end of the inverted chassis. The table below it gives the switch positions for the four control settings, starting from the fully anti-clockwise position of the control knob. A dash indicates open, and **C,** closed.

S16, S17 are the tone control switches, in a 3-position unit on a side-member of



The tone control switch unit, seen from the remote end of an inverted chassis.



Plan view of the A.C. chassis, model 3811, with the differences in the A.C./D.C. chassis 3812 drawn in in broken line, the mains transformer being omitted.

the chassis. The unit, which is indicated in our underside drawing of the chassis, is shown in detail in the diagram in col. 3, where it is drawn as seen from the opposite end of an inverted chassis.

In the fully anti-clockwise position of the control knob **S17** closes for deep tone, in the central position **S16** closes for medium tone, and in the fully clockwise position both switches are open.

S18, S19 are the Q.M.B. mains switches, ganged with the volume control **R10.**

Scale Lamps. — These are two Osram lamps, with small clear spherical bulbs and M.E.S. bases. In the A.C. model they are rated at 6.3 V, 0.3 A, and in the A.C./D.C. model 3.5 V, 0.15 A.

External Speaker. — Two sockets are provided at the rear of the chassis for the connection of a low-impedance (about 3 Ω) external speaker. These are the outer sockets of three in a vertical row. The centre socket is provided for the internal speaker plug, withdrawal of the plug muting the speaker.

CIRCUIT ALIGNMENT

All the R.F. and I.F. adjustments are accessible from the top of the chassis and complete alignment may be carried out with the chassis in the cabinet.

I.F. Stages.—Turn gang and volume control to maximum. Connect signal generator, via a 0.1 μF capacitor in each lead, to control grid (pin 6) of **V2** and chassis. Switch set to L.W., feed in a 470 kc/s (638.3 m) signal and adjust the cores of **L13** (location reference B2) and **L12** (B2) for maximum output. Transfer "live" signal generator lead to control grid (pin 6) of **V1,** and adjust the cores of **L11** (A2) and **L10** (A2) for maximum output. During these adjustments, reduce the input as the circuits come into line to avoid AGC action.

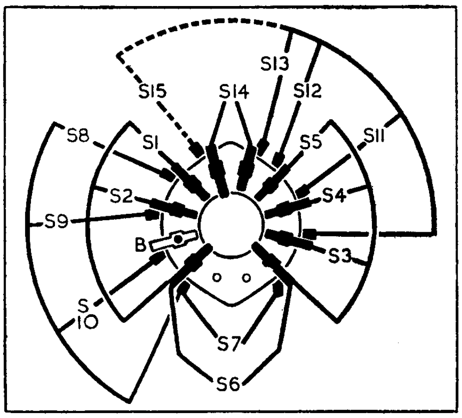
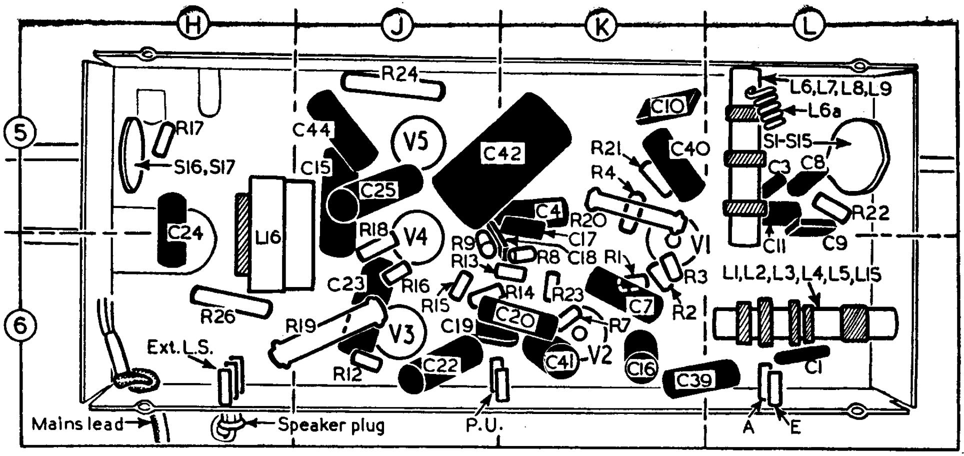


Diagram of the waveband switch unit, seen from the remote end of an inverted chassis. S15 is omitted in the A.C. model 3811. Below is the associated switch table.

Switch	S.W.	M.W.	L.W.	Gram
S1	C	—	—	—
S2	—	C	—	—
S3	C	—	—	—
S4	—	C	—	—
S5	—	—	C	—
S6	—	—	—	C
S7	—	—	—	C
S8	C	—	—	—
S9	—	C	—	—
S10	—	—	C	—
S11	C	—	—	—
S12	—	C	—	—
S13	—	—	C	—
S14	—	—	—	C
S15	—	—	—	C



Underside view of the chassis of the A.C./D.C. model 3812. Diagrams of the two switch units appear in cols. 3 and 4.

R.F. and Oscillator Stages.—With the gang at maximum capacitance, the cursor should coincide with the high wavelength ends of the tuning scales. Transfer signal generator leads to **A** and **E** sockets.

S.W.—Switch set to S.W., tune to 16.67 m on scale, feed in a 16.67 m (18 Mc/s) signal and adjust **C34, C29** for maximum output. Tune to 50 m, feed in a 50 m (6 Mc/s) signal and check calibration. If the calibration error is large, the position of the top turn of **L6** (L5) or the spacing of the turns of **L6a** (if fitted) should be adjusted, and the alignment repeated until satisfactory calibration results.

M.W.—Switch set to M.W., tune to 200 m on scale, feed in a 200 m (1,500 kc/s) signal and adjust **C35** (A1) and **C30** (A2) for maximum output. Tune to 500 m, feed in a 500 m (600 kc/s) signal and adjust **C37** (A1) for maximum output. Repeat these adjustments until no improvement can be obtained.

L.W.—Switch set to L.W., tune to 800 m on scale, feed in an 800 m (375 kc/s) signal and adjust **C36** (A1) and **C31** (A2) for maximum output. Tune to 1,949 m, feed in a 1,949 m (154 kc/s) signal and adjust **C38** (A1) for maximum output. Repeat these adjustments until no improvement can be obtained.

RADIOGRAM MODIFICATIONS

In general, it may be said that the circuit differences between the 6911 A.C. ARG and the A.C. table model 3811 are the same as those between the 3811 and the 3812, excluding of course the A.C./D.C. mains input circuit and the earthy isolating capacitor.

The chassis, however, is quite different physically, and this applies also to all the A.C. radiograms associated with this Service Sheet. Their circuits are identical with that of the 6911, but their chassis are different physically.

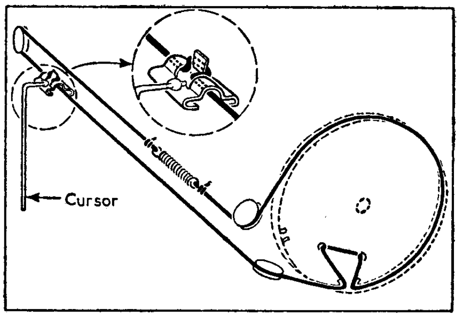
The circuit of the A.C./D.C. ARG is identical with that which we show for the 3812, and again this applies to all the A.C./D.C. radiograms, but physically the chassis are different. All the circuit details in our diagram overleaf that are drawn in broken line apply to all these A.C./D.C. models. Otherwise their diagrams conform with the main diagram, which is drawn in solid line.

DRIVE CORD REPLACEMENT

The gang drive is direct via an epicyclic reduction device, but a cord is used for the scale drive. A new cord requires about four feet of high-grade flax fishing line, plaited and waxed.

The course followed by the cord is simple, as shown in the accompanying sketch, where the system is drawn as seen from the front right-hand corner of the chassis with the gang at maximum. The first operation is to thread the cord through the two holes in the face of the gang drum, near the gap in its rim. Then tie the tension spring to one end.

The cord can then be run as shown, tying off the other end of the cord at the free end of the spring. The cord can be drawn through the drum holes as required to bring the spring to the required position. The cursor carriage can be slipped on afterwards, the cord being slipped off one of the pulleys temporarily to allow sufficient slackness.



Three-quarter view of the drive cord system, seen from the front right-hand corner of the chassis.

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